

1160 W. Orange Grove Ave., Arcadia, California 91006, U.S.A.

NORTH DAKOTA BUTTERFLY CALENDAR¹

(INCLUDING POSSIBLE STRAYS)

TIM L. McCABE² & RICHARD L. POST³

THE STATE OF NORTH DAKOTA has an interesting intermingling of eastern and western elements. Variation in altitude in North Dakota is slight and gradual, ranging from 753 feet on the Red River at Pembina in the northeast to 3,468 feet on Black Butte in the southwest. To the north, the Turtle Mountains (elevation 2,500') rise 400-600 feet above the surrounding plain. They are of interest because of their aspen and oak forests which, together with the Pembina Hills, harbor many woodland and Canadian Zone species.

The prairies west of the Missouri River are too steep and rough to be cultivated. These "Badlands" remain in a primitive condition. The Badlands have not been glaciated in recent times as has most of the state. Glacial lakes Souris (now the Mouse River in the north), Sargent (Sargent County in the southeast), and Agassiz (Red River Valley), which were drained when the ice sheet receded, leave an interesting fauna wherever the sandy shorelines remain undisturbed. Irregularities between the successive beaches of the receded glacial lakes form numerous sloughs and marshes. The remainder of the state is prairie, marking the northern extension of the Great Plains.

136 species of Rhopalocera have been recorded in the confines of the state and an additional 10 species of likely occurrence (indicated by quotation marks) are included in the Calendar. Flight data for these 10 have come from the nearest available population. Numerous additions and deletions have been made since Puckering & Post's 1960 list of butterflies of North Dakota. A list of the skippers is presented here for the first time. The following butterfly species have been recorded

¹Published with the approval of the Director of the North Dakota Agri. Exp. Station as Journal Article No. 678.

²Department of Entomology, Cornell University, Ithaca, N.Y. 14853.

³Department of Entomology, North Dakota State University, Fargo, N.D. 58102.

from the state since 1960: *Colias alexandra* Edward, *Phoebus sennae eubule* (L.), *Papilio cresphontes* Cramer, *Danaus gilippus berenice* (Cramer), *Satyrium calanus* (Godart), *Plebejus shasta minnehaha* (Scudder), *Feniseca tarquinius* Fab., *Hemiargus isola* (Reak.), *Everes amyntula* (Boisduval), *Callophrys sheridanii* (Edw.), *Incisalia polia obscuris* Ferris, *Apodemia mormo mormo* (Felder & Felder), *Limenitis arthemis astyanax* (Fab.), *Polygonia satyrus* (Edw.), *Polygonia faunus rustica* (Edw.), *Chlosyne harrisii hanhami* (Fletcher), *Oeneis alberta alberta* Elwes, *Erebia discoidalis* (Kirby). The following have been deleted from the 1960 list because of misidentifications: *Papilio bairdii bairdii* Edw. (mistaken for *P. polyxenes asterius* Stoll) and *Polygonia gracilis* (G. & R.) (mistaken for *P. progne* (Cramer)). Also, the following have been deleted because of incorrect data: *Euchole ausonides ausonides* Lucas (specimen actually from South Dakota), *Oeneis chryxus calias* (Scudder), *O. c. strigulosa* McD., and *Erebia epipsodea sineocellata* Skinner. The last three are Satyrids (student collected - labeled Fargo) that do not exhibit marked migratory tendencies. The *O. chryxus* occurs to the northeast in northern Manitoba in the Precambrian region and is not considered an 'accidental' species in North Dakota. The *Erebia* is an unlikely 'possible' for northernmost North Dakota, but certainly not for the southeast.

The status of several species in the state remains unresolved. *Colias alexandra* has a previously unknown double brood in southwestern North Dakota. It is found in higher areas where its foodplant *Thermopsis rhombifolia* grows. *Papilio zelicaon-gothica* from the Badlands is still in a confused state. Mr. James Oberfoell's (Bowman, N.D.) rearing studies (unpublished) reveal a dark form which resembles *P. kahli* Chermock & Chermock of the Riding Mountains. Dr. R. L. Post has seen a specimen of *Danaus gilippus berenice* and three *Papilio cresphontes* from Fargo. Unfortunately, the specimens were lost when the Fargo Central High School burned down.

The format of the Calendar is as follows: Each month is divided into thirds. The various markings are an indication of flight periods. The markings indicate:

- (.) non flight period
- (-) few or worn specimens
- (*) fresh specimens
- (") possible occurrence

Statewide occurring species appear two to three days earlier in western North Dakota. Species normally observed in May fre-

quently are observed earlier when above normal climatic conditions prevail in March and April; summer species are minimally affected. In the comments, "Badlands" refers to both the North and South Units unless otherwise specified. The 100th meridian divides the state into Eastern and Western halves. The arrangement and nomenclature follows Dos Passos (1964) and has been updated to follow most recent usage.

Following are some of the best collecting areas in North Dakota:

Area	Township - Range - Section
Alexander (3.5 miles N)*	T151N R101W S18
Amidon	T134N R101W S1 & 2
Burning Coal Vein overlook	T136N R102W S13 NW $\frac{1}{4}$
Burning Coal Vein ravine	T136N R102W S13 NW $\frac{1}{4}$ & 14 NE $\frac{1}{4}$
Burning Coal Vein rabbittbush stand	T136N R102W S14 NW $\frac{1}{4}$
Chase Lake	T141N R69W S19
Killdeer	T142N R95W S 13 & 24
Killdeer Mountains	T146N R96W S10
Marmath	T135N R106W S16, 21, 28
McLeod prairie*	T134N R53W S8 NE $\frac{1}{4}$
'Meg' hill (Slope Co.)	T136N R102W S14 NE $\frac{1}{4}$
Mineral Springs (Slope Co.)	T133N R100W S22
Mirror Pool (Ransom Co.)*	T136N R53W S36 SE $\frac{1}{4}$
Mirror Pool (Richland Co.)*	T135N R52W S4 SW $\frac{1}{4}$
Tongue River Game Management Area	T161N R56W S3 & 4
Turtle Mountains	T163N R76W S10 - 15
Walcott Dunes	T135N R51W S7, 8, 17, 18
White Buttes	T134N R101W S15 E $\frac{1}{4}$

Areas marked with an asterisk (*) are places subject to change in the near future. The Mirror Pools will be totally submerged if the plans for the Kindred dam are implemented. The Alexander area as well as the McLeod prairie may be subjected to plowing or grazing.

North Dakota Butterfly Calendar

Species	May	Jun	Jul	Aug	Sep	Oct	Comment
Megathymus texanus leussleri (H)	...	**	*-	Badlands to Missouri R.
Lerodea eufala (Edwards)	-	---	...	Rare southern migrant
'Amblyscirtes simius' Edwards	...	**	*-	May occur in Badlands
Amblyscirtes oslari (Skinner)	..*	*-	Badlands
Amblyscirtes vialis (Edwards)	...	*-	-	Badlands & Turtle Mts
'Amblyscirtes hegon' (Scudder)	...	*-	Minnesota in woods
Atrytonopsis hianna hianna (Sc)	..*	*-	Dry prairies
Euphyes dion dion (Edwards)	**	-	---	...	E ND in sloughs
Euphyes vestris metacomet (Harr)	**	-	---	...	Statewide
Poanes massasoit massasoit (Sc)	*-	Richland-Ransom Bogs
Poanes hobomok (Harris)	**	-	---	...	Statewide near trees
'Poanes taxiles taxiles' (Edw)	**	-	---	...	Black Hills, S.D.
Poanes viator viator (Edw)	*-	-	---	...	Eastern sloughs
'Ochlodes sylvanoides napa' (Edw)*	*-	...	Black Hills, S.D.
Atrytone arogos iowa (Scudder)	**	-	---	...	E virgin prairies
Atrytone delaware delaware (Edw)*	*-	Statewide
Atrytone delaware lagus (Edw)*	*-	SW N.D.
Atalopedes campestris (Boisd)	...	**	-	..*	**	-	Southern migrant
Wallengrenia egeremet (Scudder)	**	-	---	...	Richland-Ransom Co.
Polites coras (Cramer)*	**	-	---	...	Statewide
Polites themistocles (Latreille)*	**	-	---	...	Statewide
Polites origines rhena (Edw)*	*-	-	---	...	SW uncommon
Polites mystic dacotah (Edw)*	**	-	---	...	Statewide
Hesperia uncas uncas Edwards	...	**	*-	*-	---	...	SW N.D.
Hesperia comma assiniboia (Lym)	...	-	...	**	-	---	Statewide, prairies
'Hesperia nevada' (Scudder)	...	**	*-	*-	---	...	May occur in NW ND
Hesperia pahaska pahaska Leuss.	...	**	*-	SW N.D. - Badlands
Hesperia leonardus pawnee Dodge	**	-	---	Dry prairies
Hesperia ottoe Edwards*	*-	-	---	...	Badlands
Hesperia dacotae (Skinner)*	*-	-	---	...	E virgin prairies
'Hesperia sassacus manitiboides'	...	**	-	Minnesota woods
Yvretta rhesus (Edw)	..*	*-	-	Badlands
Oarisma powesheik (Parker)*	*-	SE N.D.
Oarisma garita (Reakirt)	...	**	-	Statewide, but rare SE
Ancyloxypha numitor (Fabricius)	...	**	*-	**	*-	-	E ND along water
Carterocephalus paleomon mandan	..*	*-	Turtle Mts-Pembina Hills
Pholisora catullus (Fab.)	...	**	*-	---	*-	-	Statewide
Pholisora libya lena (Edw)	**	-	---	...	Badlands
Pyrgus scriptura (Boisduval)	**	-	---	...	Badlands
Pyrgus communis communis (Grt)*	*-	**	*-	---	Statewide, common late
Erynnis icelus (Sc & Burgess)	**	*-	Turtle Mts-Pembina Hills
Erynnis brizo brizo (B. & Lec.)	**	-	Turtle Mts-Pembina Hills
Erynnis persius frederecki Frmn	**	*-	Western N.D. rare
Erynnis lucilius afranius (Lint)	**	*-	**	-	---	...	SW - two broods
'Erynnis martialis' (Scudder)	..*	-	May occur in E N.D.
'Erynnis horatius' (Scud. & Burg)	...	-*	*-	---	May occur in SE N.D.
Erynnis juvenalis juvenalis (F.)	..*	**	Turtle Mts & SW
Thorybes pylades (Scudder)	..*	**	NE & Badlands
Epargyreus clarus clarus (Cram)	...	**	-	Statewides, mostly SW

Species	May	Jun	Jul	Aug	Sep	Oct	Comment
<i>Papilio polyxenes asterius</i> Stol	---	---	---	---	---	...	Eastern N.D.
<i>Papilio bairdii brucei</i> Edw	..-	..-	..*	*--	Badlands, high ridges
<i>Papilio zelicaon gothica</i> Reming	..*	*--	---	Badlands, high ridges
<i>Papilio crespontes</i> Cramer-	Southern migrant, rare
<i>Papilio glaucus glaucus</i> L.	..-	***	..-	..-	..-	...	Statewide, uncommon
<i>Papilio glaucus canadiensis</i> R&J	..-	***	..-	Badlands, Turtle Mts
<i>Papilio rutulus rutulus</i> Lucas	..-	***	..-	Badlands, rare, sporadic
<i>Papilio multicaudatus</i> Kirby	..*	***	*--	SW N.D.
<i>Pieris sisymbrii elivata</i> B & B	..*	---	---	Harding Co., S.D.
<i>Pieris protodice protodice</i> B&L	..-	---	---*	---	Statewide, common
<i>Pieris rapae</i> (L.)	..-	..*	***	***	***	*--	Statewide, common
<i>Colias eurytheme</i> Boisduval	..-	---	---	---	---	---	Statewide
<i>Colias philodice</i> Godart	---	---	---	---	---	---	Statewide
<i>Colias cesonia</i> (Stoll)-	..*	---	..-	...	Southern migrant
<i>Colias alexandra alexandra</i> Edw-	..-	*--	Badlands, two broods
<i>Phoebis sennae eubule</i> (L.)-	Southern migrant, rare
<i>Eurema mexicana</i> (Boisduval)-	Southern migrant, rare
<i>Eurema lisa</i> Boisduval & Lec.*	..-	Southern migrant
<i>Natholis iole</i> Boisduval-	---	..-	...	Southern migrant
<i>Euchole olympia olympia</i> Edw	***	---	SW, rare in SE
<i>Mitoura siva siva</i> (Edw)	..*	***	..-	Badlands, on Juniper
<i>Strymon melinus hyperici</i> B & L	---	---	---	---	..-	...	S N.D. uncommon
<i>Harknlenius titus titus</i> (Fab)-	***	---	Statewide near plum
<i>Satyrium calanus</i> (Godart)*	---	Vicinity of Oak SE, N
<i>Satyrium edwardsii</i> (Grt & Rob)-	..*	..-	Vicinity of Oak SE, N
<i>Satyrium acadica</i> (Edw)*	*--	Statewide near willows
<i>Satyrium liparops fletcheri</i> (M)*	***	..-	Statewide, uncommon
<i>Lycaena hyllus</i> (Cramer)*	..*	..*	..-	...	Mostly E ND - low areas
<i>Lycaena xanthoides dione</i> Scud.*	..*	Statewide
<i>Lycaena rubidus sirius</i> (Behr)*	..*	SW - low areas
<i>Lycaena helloides helloides</i> (B)-	---	---	---	..-	Statewide
<i>Plebejus melissa melissa</i> (Edw)*	*--	..*	*--	..-	Statewide
<i>Plebejus saepolius amica</i> (Edw)	...	***	..-	S N.D. esp. Badlands
<i>Plebejus acmon</i> (Westwood & Hew)	...	***	..*	..*	..-	...	SW N.D.
<i>Plebejus shasta minnehaha</i> (Scud)*	Badlands, rare
<i>Hemiargus isola</i> (Reakirt)-	---	---	---	Southern migrant, rare
<i>Feniseca tarquinius</i> (Fab)	..*	..-	..-	..*	Pembina Hills
<i>Everes comynta</i> (Godart)	---	---	---	---	---	---	Eastern N.D.
<i>Everes amyntula</i> (Boisduval)	---	---	---	---	---	---	N & W N.D.
<i>Glaucopsyche lygdamus oro</i> Sc.	..*	*--	Statewide, esp SW & NE
<i>Celestrina argiolus lucia</i> (Kby)	***	*--	..*	---	---	..-	Statewide
<i>Callophrys sheridanii</i> (Edw)	***	McKenzie Co.
<i>Incisalia eryphon</i> (Boisduval)	..*	*--	Ponderosa Pine in SW
<i>Incisalia polios obscurus</i> Ferr.	..*	..-	Killdeer Mts
<i>Apodemia mormo mormo</i> (Felder)*	..*	---	---	Badlands
<i>Libytheana bachmanii</i> bachmanii-	Southern migrant
<i>Asterocampa celtis celtis</i> (B & L)	..*	*--	E ND near Hackberry
<i>Asterocampa clyton clyton</i> (B & L)-	..*	---	---	---	E ND near Hackberry
<i>Limenitis arthemis arthemis</i> (Dr)*	..*	---	..-	...	E N.D. & Turtle Mts
<i>Limenitis arthemis astyanax</i> (F)*	..*	---	SE N.D.
<i>Limenitis archippus archippus</i> (C)	..-	..*	..*	***	---	...	Mostly S & E
<i>Limenitis weldmeyeri oberfoelli</i>*	---	SW N.D.

Brown

Species	May	Jun	Jul	Aug	Sep	Oct	Comment
<i>Vanessa atlanta rubria</i> (Fr)	..	---	---	---	---	..	Statewide
<i>Cynthia virginiensis</i> (Drury)	---	---	---	---	---	..	Statewide
<i>Cynthia cardui</i> (L.)	...	---	---	---	---	---	Statewide
<i>Cynthia annabella</i> (Field)	...	---	---	---	Badlands, sporadic
<i>Precis lavinia coenia</i> (Hubner)	---	...	Southern migrant, rare
<i>Nymphalis vau-album j-album</i> (B&L)	---	---	---	---	---	---	SW, E, & NE, uncommon
<i>Nymphalis californica</i> (Boisd)*	---	...	Western migrant, rare
<i>Nymphalis milberti milberti</i> (G)	---	..	---	---	---	---	Statewide
<i>Nymphalis antiopia antiopia</i> (L)	---	---	---	---	---	---	Statewide
<i>Polygonia interrogationis</i> (Fab)	---	---	---	---	---	---	Statewide
<i>Polygonia comma</i> (Harris)	---	---	---	---	---	---	Statewide
<i>Polygonia zephyrus</i> (Edw)	---	..	---	---	---	---	SW, Badlands, rare
<i>Polygonia satyrus</i> (Edw)	---	..	---	---	---	---	SW, Badlands, rare
<i>Polygonia progné</i> (Cramer)	---	---	---	---	---	---	SW & East
<i>Polygonia faunus rustica</i> (Edw)	---	..	---	---	---	---	Turtle Mts, uncommon
<i>Phyciodes texana texana</i> Edw	Southern migrant, rare
<i>Phyciodes tharos tharos</i> (Drury)	..*	---	---	---	---	---	Statewide
<i>Chlosyne harrisii hanhami</i> (Fl)	...	---	SE N.D. rare
<i>Chlosyne nycteis nycteis</i> (Dbldy)*	---	Red R & Richland-Ransom
<i>Chlosyne gorgone carlotta</i> (Rk)	...	---*	---	---	Two broods W, one E
<i>Chlosyne acastus acastus</i> (Edw)	...	---	---	---	---	---	Two broods, Badlands
<i>Boloria selene atrocotalis</i> (H)	...	---	---	---	---	---	Statewide, but rare W
<i>Boloria bellona bellona</i> (Fab)	...	---	---	---	---	---	Statewide, but rare W
' <i>Euphydryas anicia</i> ' (Dbldy)	..*	Harding Co., S.D.
<i>Speyeria idalia</i> (Drury)	---	---	---	---	E N.D., prairies
<i>Speyeria edwardsii</i> (Reakirt)	---	---	---	---	W N.D.
<i>Speyeria callippe calgariana</i> (M)*	---	---	---	---	W N.D.
<i>Speyeria atlantis helena</i> (dos P)	---	---	---	---	Turtle Mts
<i>Speyeria cybele cybele</i> (Fab)	---	---	---	---	Statewide
<i>Speyeria aphrodite mayae</i> (Gund)	---	---	---	---	Statewide, mostly E
<i>Euptoieta claudia</i> (Cramer)	---	---	---	---	Statewide
<i>Danaus plexippus plexippus</i> (L)	...	---	---	---	---	---	Statewide
<i>Lethe anthoned borealis</i> (Clark)*	---	---	---	---	In N and along rivers
<i>Lethe eurydice eurydice</i> (Johan)*	---	---	---	---	Low areas
<i>Megisto cymela cymela</i> (Cramer)	...	---	---	---	---	---	Richland-Ransom & Red R.
<i>Coenonympha tullia inornata</i> Edw	...	---	---	---	---	---	Statewide
<i>Neominois ridingsii ridingsii</i> E*	---	---	---	---	W N.D., high areas
<i>Cercyonis pegala ino</i> Hall	---	---	---	---	Statewide
<i>Cercyonis meadii</i> (Edw)	---	---	---	---	S Badlands
<i>Cercyonis oetus oetus</i> Boisd.	---	---	---	---	SW N.D
<i>Cercyonis oetus phocus</i> (Edw)	---	---	---	---	S Badlands
<i>Oeneis uhleri varuna</i> (Edw)	..*	---	---	---	---	---	Dry prairie
<i>Oeneis alberta alberta</i> Elwes	---	..*	---	---	---	---	N central N.D., rare
<i>Erebia discoidalalis</i> (Kirby)*	---	---	---	---	Northern bogs, rare

LITERATURE CITED

- BAILEY, V. 1926. North American fauna. *U.S. Dept. of Ag. Wash. Print. Ofc.* pp. 1-19.
- DOS PASSOS. 1964. A Synonymic List of the Nearctic Rhopalocera. *Lep. Soc. Memoir No. 1*:1-145.
- FERRIS, C. D. 1971. An Annotated Checklist of the Rhopalocera of Wyoming. *Ag. Exp. St. Univ. Wyoming, Laramie, Sci. Mon.* 23:1-75.
- FREEMAN, H. A. 1969. Systematic Review of the Megathymidae. *J. Lep. Soc.* 23(1):1-58.
- HOOPER, R. R. 1973. Butterflies of Saskatchewan. *Mus. Nat. Hist., Regina, Sask.* Pp. 1-55.
- KNUDSON, W. & R. L. POST. 1963. Butterflies of Bottineau County. *Dept. of Entomology, North Dakota State Univ. Pub. No. 2.*
- PUCKERING, D. L. & R. L. POST. 1960. Butterflies of North Dakota. *Dept. of Entomology, North Dakota State Univ. Pub. No. 1.*